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DESCRIPTION OF A NEW SPECIES OF MELITÆA FROM SOUTHERN CALIFORNIA.

BY W. H. EDWARDS, COALBURGH, W. VA.

MELITÆA AUGUSTA.

Male.—Expands from 1.6 to 1.75 inch; belongs to *Chalcedon* group, but is as conspicuously red as the species *Chalcedon* is black; upper side black, the surface nearly covered with light red and pale yellow spots, disposed as in the group; the basal areas dusted with yellow scales, which, on primaries, extend along both margins; costa of same wing edged red; both hind margins bordered by small red spots, varying in shape, sometimes narrow and as of a broken stripe, sometimes more or less rounded or ovate; the spots of second row are small, lunular, largest on secondaries, edged with red, the interior being yellow, or they are nearly all red with a small yellow patch in middle; sometimes this yellow is thinly washed red; the third row on primaries is either wholly yellow, or yellow with red edges, particularly on the outer side; on secondaries wholly red, and often very deep, so as to make a conspicuous broad band; the fourth row on primaries is red, sometimes with the spots next the two margins either yellow or in part yellow; around the end of cell yellow spots four or five in number; in the cell spots of red and yellow alternately, four in all, the yellow one at base more or less stained red; two yellow spots below cell with black ground between, and nearer base a small duplex red one; the fourth row on secondaries is yellow, either of small spots or pretty large ones, and the three or four from costal margin are red on their outer sides; a red stripe outside the cell from the end to costal margin; two small yellow spots inside cell, with a red one between them and a yellow spot below; fringes yellow, black at the tips of the nervules. Some examples have scarcely any yellow, the yellow having been replaced by red, or tinted red.

Under side of primaries red, the yellow spots repeated, enlarged, and

of clear color ; outside end of cell a large suboval red spot heavily edged black, and the cell is crossed by two wavy black lines.

Secondaries have the margins red, in a continuous band ; the second row yellow, on black ground, lunate ; the third row red, rounded on inner side and edged narrowly with yellow on all sides but the exterior ; the fourth row yellow, cut unequally from one margin to the other by a black line ; thence to base red ; a triangular yellow spot at end of cell, and in a straight row from costal margin three yellow spots, one on margin and partly in costal interspace, one at top of cell, the third in lower median interspace. Sometimes the fourth row is expanded towards base along inner margin, giving the appearance of a fourth spot to the basal row ; the shoulder and edge of costa yellow.

Body above black ; red hairs on collar ; thorax beneath yellow ; abdomen red at sides, yellow along venter, red at end ; legs red ; palpi red ; antennæ pale red-brown, annulated whitish above, red below, club black on upper side, the tip ferruginous, elsewhere red-brown.

Female.—Expands from 1.7 to 2.2 inches.

Like the male in general, but the spots larger in proportion ; on the underside, the spots of second row on each wing are large, lanceolate, the outer side deeply incised. In occasional examples the outer part of upper side of secondaries is covered by a broad red band in place of the spots of second and third rows, and this area is separated from the narrow marginal band by a black line.

In an aberration there is no trace of yellow on upper side, and on the under side of secondaries the yellow bands from margin to cell are replaced by wood-brown, while the yellow basal spots are obscured.

I name this species *Augusta*, in memory of the late Mrs. W. G. Wright. Mr. Wright has taken it in vicinity of San Bernardino abundantly, and writes of it thus : "*M. Augusta* is found on top of the mountains, elevation 5,000 feet, and is not found at all till you reach the top. They do not descend the mountain sides, nor are they found in the canyons. On the summit oak and pine trees are scattered, and the ground is covered with grasses and flowering plants. The butterfly seems all the time on flowers, and is a great feeder. I have never seen a

pair in copula, nor a female ovipositing, and I know nothing of the early stages. Every year I find *Augusta* at the same place, in the month of June."

It seems to me probable that *Augusta* will be found in Utah and Arizona, perhaps also in Nevada.

TENTHREDINIDÆ COLLECTED AT OTTAWA, 1889.

BY W. HAGUE HARRINGTON, OTTAWA.

The past season was not a favorable one for the collection of Hymenoptera. The early spring was very fine and warm, but was followed by prolonged spells of cool and rainy weather, which not only made collecting difficult, but appeared to destroy many of the insects. This will be seen by the following list, in which a large proportion of the species are represented by single specimens. It contains about eighty species, or nearly two-thirds of those that have so far been taken in this locality.

Few of the species were at all common, the most abundant and destructive being *N. Erichsonii* Hartig., which we now find wherever there are larches, and by whose larvæ these trees are defoliated and injured. *N. Ribesii* Scop. (*ventricosus* Hartig.), the gooseberry saw-fly, and *H. maculatus* Norton, the strawberry saw-fly, were also numerous. On the other hand several of the species, especially of Macrophya and Tenthredo, which are usually common in midsummer, were not observed, and there was a noticeable scarcity of larvæ.

Cimbex americana Leach, var. *decemmaculata* Leach, female, June 16.

var. *La Portei* St. Farg., male, May 11.

Trichiosoma triangulum Kirby, male, May 12.

Abia Kennicotti Norton, female, May 11.

Hylotoma clavicornis Fabr., female, June 13.

McLeayi Leach, female, May 10.

Priophorus aequalis Norton, female, July 14.

Pristophora identidem Norton, male, May 27 ; female, June 16.

tibialis Norton, female, May 12 ; female, June 26.

Euura orbitalis Norton, three females, May 24.

Nematus aurcopectus Norton, female, May 9 ; two females, May 10 ; female, May 18 ; female, May 27.

- bivittatus* Norton? female, May 11.
corniger Norton, male, May 17; male, May 24; male and female,
May 27; female, June 2; male, June 16; male, Aug. 8.
Erichsonii Hartig., female, abundant from May 19; male, June 15.
latifasciatus Cresson, female, June 7.
malacus Norton, female, May 18.
mendicus Walsh, one male and two females, May 9; female, May 17;
female, June 26.
pleuricus Norton? female, May 9.
Ribesii Scop., female and male, common, May, June.
Several species not yet examined, May, June.
Emphytus apertus Norton, female and male, May 17; female, May 18;
female, May 27; female, Aug. 8.
hullensis Prov., female, June 23.
mellipes Norton, male, May 11; female, May 24.
Harpiphorus maculatus Norton, male and female abundant, May 9 to
June 26.
Dolerus albifrons Norton, seven males and two females May 24.
aprilus Norton, male and female, May and June, common.
arvensis Say, female, April 19, May and June, common.
bicolor Beauv., female, May 27.
collaris Say, female, May 10; female, May 19; female, June 2.
unicolor Beauv., male, May 12.
Monophadnus bardus Say, female June 13.
medius Norton, two females, May 11; female, May 18; female,
May 24; two females, June 13.
rubi Harris, female, May 12; female, May 27.
Phymatocera canadensis Harrington, female, May 10; female, May 11;
female, May 17.
fumipennis Norton, four males and three females, May 17; female
and male, May 18; female, May 20; two males, June 22.
Hoplocampa halcyon Norton, female May 11; female, May 17.
Monostegia ignota Norton, two males and one female, May 27.
rosæ Harris, female, May 19; female, May 22; female, May 24.
Selandria flavipes Norton, two males, May 24; male and female, June 2;
female, June 8; male, June 13; two females, August 8.
Allantus basilaris Say, female, June 28; male, July 28.

- Macrophya externa* Say, female, June 26.
 flavicoxa Norton, female, June 13; female, June 23; two females, June 26; two females, June 28; female, July 1.
 varia Norton, female, June 20.
 sp. female, June 26.
- Pachyprotasis delta* Prov., male, June 16; female, June 20; one male and two females, June 23; two females, June 30.
 omega Norton, male, June 28; male, July 28.
- Taxonus albidopictus* Norton, female, July 14.
 amicus Norton, male, June 16; male and female, June 26.
 rufipes Harrington, male, May 18.
 unicinctus Norton, female, May 27.
- Strongylogaster annulosus* Norton, female, May 24.
 apicalis Say, female, June 13; female, June 28; male, July 11; female, July 28.
 longulus Norton, male, May 24.
 luctuosus Prov., female, May 22.
 robustus Prov.,? female, June 13; two females, June 28; male, July 1.
 soriculatus Prov., female, May 24.
 tacitus Say, male, May 24; female, June 8; male, August 8.
- Tenthredo eximia* Norton, male, May 24; female, June 28.
 grandis Norton, female, June 15.
 mellina Norton, female, July 7.
 ruficolor Norton, female, May 24; female, July 1.
 rufipes Say, female, June 2; female, June 23; two females, June 26.
 rufopectus Norton, male, June 14; male, June 16; female, June 26; male, July 1.
 verticalis Say, female, June 13; female, July 1; female, July 14.
- Tenthredopsis atroviolacea* Norton, female, June 16; female, June 30.
- Lophyrus Lecontei* Fitch, two females, (bred) May.
- Monoctenus fulvus* Norton, one male and two females, May 13.
- Lyda canadensis* Norton, female, June 26.
 luteicornis Norton, female, June 2.
 luteomaculata Cresson, female, May 24.
 perplexa Cresson, male, May 11; male, May 17.
 quebecensis Prov., female, June 30.

THE NOCTUIDÆ OF EUROPE AND NORTH AMERICA
COMPARED.

(Fifth Paper.)

BY A. R. GROTE, A. M., BREMEN, GERMANY.

Tribe *Orthosiini*.

The vestiture is woolly, and in this lies a distinguishing character from the *Agrotini* and *Hadenini*, which some genera much resemble, while the body is hardly tufted; the rather broad thorax has sometimes a median ridge. The colours of the moths are often shades of brown, red and yellow, like the autumn foliage, in which many of the hibernating species hide. The eyes of the first genera are hairy; in several the tibiæ are spinose, the reverse being usually the case. Whether our, mostly western, species allied to *Perigrapha cincta* are strictly congeneric, I have not been able to decide. *Acerra normalis* has simple antennæ in the male; the ornamentation in most cases suggests the relationship. There are two European species of *Perigrapha* against seven related North American species. The genus *Teniocampa* has twenty-two described American species and only eleven European; among these is one, *alia*, identical. I have not a particle of doubt that for this genus the term *Graphiphora* Hübn., must be retained. My efforts to place the generic nomenclature upon a final basis, by fixing the types in 1874, has met with thoughtless opposition and incorrect criticism. The question of whether Hübner, or others, held our modern (supposed by empirics infallible) ideas upon genera, is quite beside the question of the oldest and therefore proper name for a genus. I have exposed this sort of reckless criticism in the second part of my Check List, 1875, 1876. Only my desire to avoid contention and to enable a comparison of our fauna by the use of the same terms, has induced me to cede the present instance, because the name *Graphiphora* taken from Hübner (to whom we owe almost all the leading generic names in the Noctuidæ), had been mis-applied. I think, now, I may have been wrong in this, and that *Graphiphora* should be used, as I originally proposed, with the type *Gothica*, and *Teniocampa* rejected. Only in this way shall we obtain a stable nomenclature, and the European catalogues must conform, if nearer conclusions are to be arrived at, and lists are to be useful beyond a mere stringing of the different species.

The North American hairy-eyed genera allied to *Teniocampa* are, further, *Crocigrapha*, with a tuft behind the collar; *Orthodes*, *Himella* and *Morrisonia* (the species of which latter curiously resemble *Actinotia*, but seem to hibernate, being found early in the year on sallows); while I have described American species belonging to the naked-eyed European genera *Parastichtis* and *Anchocelis*. Naked-eyed genera, with armed tibiae, are *Pachnobia* and *Metalepsis*, occurring in both faunæ, and *Pseudorthosia*, *Choephora*, *Pseudoglaea*, which seem to be American only. *Trichorthosia*, which has hairy eyes, seems to be more allied to *Xanthia*, or *Orthosia*, in the shape of the wings; but, if we do not divide this tribe, as is perhaps unnecessary, it may be ranged with the other hairy-eyed genera, together with the somewhat aberrant *Trichocosmia*. The principal genus is, perhaps, *Orthosia*, of which fourteen European and seventeen American species are described, mostly of a European habitus, and one representative, *ferrugineoides*. While I have referred one identical species (*togata*) to *Xanthia*, which, as distinct from *Orthosia*, contains seven European species, the singular genus *Jodia* Hub. (= *Hoporina* Boisd.), has an American representative of *croceago* in *J. rufago* Hübn. *Eucirroedia* is a modification of the European genus *Cirroedia*; while the peculiar genus *Scoliopteryx* with its one species, *libatrix*, is common to Europe and America, from Hudson's Bay to Virginia, and is probably a survival of the former circumpolar fauna. *Glaea* Hübn. (= *Orrhodia* Hübn., *Cerastis* Tr.) has twelve European and only four American species, but the nearly related American genus *Epiglaea*, which differs from *Glaea*, much as *Richia* differs from *Agrotis*, by the presence, namely, of a median thoracic ridge, has five, and *Homoglaea* two described species. Our most beautiful species is *H. carnosus*, in which the egg is also pink in colour. *E. venustula* is said to be the same as *E. sericea*; if the description of the latter is compared, it will be seen to contradict that of *E. venustula* in important points, which remain incomprehensible if the two are really the same. The genera *Ipimorpha* and *Calymnia* have representative, the genus *Cosmia*, an identical species, *paleacea*. While there are a few peculiar genera in both faunæ, such as *Dicycla* in Europe, and *Zotheca* in America, the affinities of the two faunæ in this tribe are strongly marked. The peculiar genus *Scopelosoma* has in Europe one, in America nine species. Of these it is difficult to say which is nearest to the European *satellititia*; the identification of Guenée's *sidus*

is hence almost impossible; his type also cannot be found. In my opinion he may have had a form of *Walkeri* before him; but whether this, or *vinulenta*, or even *tri-stigmata*, or *Morrisoni*, cannot, with certainty, be made out from his comparative description. As I have separated all the American forms under distinct names, and Mr. Thaxter has shown the distinctness of most of them by breeding, these names should be retained until further evidence be forthcoming as to the single species indicated by Guenée. A different course would be the result of mere opinion and, without scientific value, only make confusion.

Tribe *Calocampini*.

The vestiture resembles that of the preceding tribe, but the wings are narrower, the legs proportionately shorter, unarmed. The palpi are short; male antennæ thickly ciliate. The primaries are blunt, not widening outwardly as much as usual, with gray or brown, streaky, stone-like markings, hence the name *Lithophane*, used for the principal genus by Hübner. This genus is incorrectly called *Xylina*; Hübner's genus of this name having for type a species of *Hadena*. It seems to have been customary for earlier authors to take names out of Hübner's writings and apply them arbitrarily, with or without diagnosis. The injustice and absurdity of this proceeding must be evident to all thinking persons. Only an empiric, full of his own importance and wishing to elevate himself by contrast, can commit the blunder. If Hübner has not given neurational characters, it is because neurational characters were not then known; at least he has not given us incorrect descriptions of the venation, which is in his favor as compared with certain quite modern writers. *Lithophane* has eight European and about twenty-five American species; again a large preponderance. Of these, *Thaxteri* represents the European *lambda*; but no variety of the latter corresponds with our American form, which must be regarded as a distinct representative species accordingly. The European *ingrica* seems to be represented also by *pexata* and its variety *Washingtoniana*, although in the latter instance nearer comparisons are necessary, which I have not been able to make. *Lithomia* Hüb., which differs by the character of the palpal vestiture and the elevated collar, has apparently a representative species in *germana*; but I strongly suspect that this is really identical with the European *solidaginis*. *Calocampa* has

two European and apparently four American species, one of which is unknown to me; of the other three, *nupera* is said to represent the European *vetusta*, although perhaps identical with it; *cineritia* has the widest range, while both this and *curvimacula* are quite different from either of the European forms. The representation of this tribe in Europe is covered by the American forms.

Tribe *Cuculliini*.

The elongate wings are sharply pointed, the collar hood-shaped; the abdomen is tufted terminally and extends beyond the proportionately small secondaries. The European species (43) greatly outnumber the described American forms (11). There are a large number of closely related species in the European fauna, many of comparatively recent detection. Perhaps more remain to be described in North America, though it is probable that both this and the next tribe will show an excess of European forms. The specific groups seem to be represented in America. I do not know, however, *luna*, which appears to be allied to the European silvery forms. In addition we have a Californian species, *matricariae* Behr. (= *serraticornis* Lintr.), which has pectinated ♂ antennæ; I have doubted its being a true *cucullia*.

Tribe *Cleophanini*.

I have referred to *Cleophana*, two American species with hood-shaped collar and the facies of *Cucullia*, but with a claw to the front tibiae. The other European genera, *Epimecia*, *Calopharia*, I have not recognized. *Nyctophaeta* I believe to be a Heliothid form.

Tribe *Euteliini*.

In this tribe of smaller moths, the wings are more or less extended in repose, in the American genus *Marasmalus* folded like a fan. The small secondaries ally them to *Cucullia*. The antennæ have a basal tuft; the collar cut out behind, not hood shaped; the abdomen more or less tufted; the eyes naked. The American *Ripogenus pulcherrimus*, a rare moth, seems to be related to the European *Eutelia adalatrix*.

Tribe *Ingurini*.

The male antennæ are simple at tip. An American form coming to our fauna probably from the south. The form resembles the preceding tribe, but the wings are entire. The species of the single genus *Ingura* are small moths, resembling the species of *Abrostola* in ornamentation, except, perhaps, *oculatrix*, which is a pretty, singularly marked moth.

Tribe *Anomiini*.

Thinly or closely scaled untufted forms, with rather broad and pointed wings and slimy vestiture, the larvæ half loopers. *Anomis* has uneven margins to the primaries. *Aletia* (the "cotton worm") has them even, somewhat sickle-shaped. *Pteratholix* and *Chytoryza* have peculiar clear spots and structure of the fore-wings. The tribe is American, and comes to our fauna from the south.

Tribe *Litoprosopini*.

Larger species with *Plusia*-like palpi, untufted, with brown wings, having curious ocellate markings and metallic points on secondaries. *Hatney* from Cuba, *configens* from the west coast, *futilis* from Florida, all belonging to *Litoprosopus*, and are tropical American forms intruding into our territory in the south.

Tribe *Calpini*.

The fore-wings are wide, with pointed apices, full external margin, a tooth on inner margin. Eyes naked, lashed. Palpi prominent, hirsute to the tips, terminating bluntly as if cut off. A single genus and species in Europe, *Calpe capucina*, has apparently an American representative in *C. canadensis* Beth. I have not been able to study other genera, indicated by Guenée and figured by various writers. This tribe would seem to be tropical in its origin. The genus *Calpe* probably belonged to the tertiary circumpolar fauna, and is of so pronounced a form that the American and European descendants have retained a decided resemblance. I do not know that *Canadensis* has been bred or carefully compared with its European ally, but I was able to recognize type specimens among Mr. Walker's synonyms and somewhat confusing generic references in this family. Full and careful comparisons are needed in many cases to decide whether the species are representative or identical.

PRELIMINARY CATALOGUE OF THE ARCTIIDÆ OF TEMPERATE NORTH AMERICA, WITH NOTES.

BY JOHN B. SMITH, NEW BRUNSWICK, N. J.

(Continued from page 14, Volume xxii.)

A. doris Bdv.1869—Bdv., Lep. Cal. (Ann. Soc. Ent., Belg.), 77, *Chelonia*.

Habitat—So. California.

I am not aware that any reference of this species to the rank of synonyms has been made. It refers almost certainly to one of our western species now known under another name. Mr. Grote has omitted the species from his list.

A. edwardsii Stretch.1873—Stretch, Zyg. and Bomb., 74, 77, pl. III., f. 9, *Arctia*.1883—Neum., Papilio, III., 149, = *achaia*?1887—Smith, Ent. Amer., III., 111, = *dahurica*.

Habitat—California.

A. excelsa Neum.1883—Neum., Papilio, III., 70, *Arctia*.1883—Hulst.,* Bull., Bkln. Ent. Soc., VI., 69, = *hais*.

Habitat—No. Car., New York, Long Island.

Food plant—*Plantago major*.*A. elongata* Stretch.1885—Stretch, Ent. Amer., I., 105, *Arctia*.1885—Neum., Ent. Amer., I., 93, = var. *determinata*.

Habitat—Was. Terr.

The curious anomaly of a species being referred as a synonym before it was described arose from the fact that Mr. Stretch, basing his species upon Mr. Neumoegen's material, returned the specimens before sending in the papers for publication. Mr. Neumoegen, working on the genus, made the reference from the label, and both gentlemen sent in their papers for publication at nearly the same time.

A. figurata Drury.1770—Dru., Illustr., II., pl. XII., f. 4, *Bombyx*.1820—Pal., Beauv., Ins. Afr. et. Am., Lep., p. 265, pl. 24, f. 4, ♂,
Phalæna.

- 1837—Westw., ed. Dru., Illustr., II., 22, *Nemeophila*.
 1837—Harris, Cat. Ins. Mass., 73, *Arctia*.
 1856—Wlk., C. B. Mus. Lep. Het. III., 625, *Nemeophila*.
 1862—Clem., App. to Morris, Synops., 341, *Arctia*.
 1865—Grt. & Rob., Ann. Lyc., N. Y., VIII., 368, *Arctia*.
 1873—Stretch, Zyg. and Bomb., 74, *Arctia*.
 1879—Graef,* Bull., Bkln. Ent. Soc., I., 3, life hist.
 1883—Hulst., Bull. Bkln. Ent. Soc., VI., 70, =*nais*.
 1887—Smith, Ent. Amer., III., 114, an sp. dist.
ceramica Hbn.
 1816—Hbn., Verz., 180, *Euplagia*.
 1865—Wlk., C. B. Mus. Lep. Het., III., 625, pr. syn.
 var. *franconia* Edw.
 1887—Edw., Ent. Amer., III., 184, *Arctia*.
 Habitat—Can., N. Y., Mass., Pa., Ills., D. C.

The distribution is undoubtedly wider, and, as certainly, some of the described species must fall in as forms of this.

A. flammea Neum.

- 1881—Neum., Papilio, I., 9, *Arctia*.
 1883—Hulst., Bull. Bkln. Ent. Soc., VI., 70, =*nais*.
 1883—Neum., Papilio, III., 149, =*placentia* var.
 Habitat—Florida.

A. f-pallida Strk.

- 1879—Strk., Rept. Eng., 1878-79, v. V., p. 1860, pl. II., f. 3.
 1883—Hulst., Bull. Bkln. Ent. Soc., VI., 70, =*nais*.
 Habitat—Rio Navajo, Colo., July 13.

This is simply a variety of *figurata*, in which all the marking save those forming a distinct ω , are obsolete. Any good series of *figurata* will show such specimens.

A. geneura Strk.

- 1878—Strk., Proc. Dav. Ac. N. Sci., II., 270, pl. IX., f. 5, ♂, *Arctia*.
 1884—French, Papilio, IV., 158, ♂, *Arctia*.
 1889—French, CAN. ENT., XXI., 162, *Arctia*.
 Habitat—Colo. (Gilpin Co.), Mt. Shasta, Calif.

Mr. French seems rather inclined to believe that the California specimens may refer to a distinct species. There is a series of *geneura* in the

U. S. National Museum, and this species, *incorrupta* Edw., with all its variations and *nevadensis*, G. & R., are all forms of a single, not very variable species, of which *docta* is the Californian form, and perhaps specifically distinct. The material in the National Museum will go far towards settling the relationship of these forms. The description of new species would be therefore rather unwise until this material can be properly studied.

A. michabo Grt.

- 1875—Grt., CAN. ENT., VII., 196, *Arctia*.
 1883—Neum., Papilio, III., 150, =*arge*.
 1886—Grt., CAN. ENT., XVIII., 108, an sp. dist.
 1887—Smith, Ent. Amer., III., 111, an sp. dist.
 Habitat—Nebraska, Dist. Col.

A. nais Dru.

- 1870—Drury, Illustr., I., pl. VII., f. 3, *Bombyx*.
 1816—Hübner, Verzeichniss, 183, *Arctia*.
 1823—Hübner, Zutr.,* 300, ff. 599, 600, *Arctia*.
 1837—Westw., ed. Drury, I., p. 15, *Spilosoma*.
 1856—Wlk., C. B. Mus. Lep. Het., III., 609, *Arctia*.
 1860—Clem., Proc. Ac. N. Sci., Phil., XII., 528, *Arctia*.
 1862—Clem., App. to Morris Syn. 339, *Arctia*.
 1864—Pack., Proc. Ent. Soc., Phil., III., 177, *Arctia*.
 1868—Grt., Trans. Amer. Ent. Soc., II., 117, *Arctia*.
 1868—Saund., CAN. ENT., I., 27, *Arctia*.
 1873—Stretch, Zyg. and Bomb., 74, *Arctia*.
 1876—Moeschl., Stett. Ent. Zeit., XXXVII., 296, *Arctia*.
 1882—French,* Papilio, II., 176, life hist.
 1883—Hulst., Bull. Bkn. Ent. Soc., VI., 69, 120, *Arctia*.
 1884—Bean,* CAN. ENT., XVI., 65, *Arctia*.
 1887—Smith, Ent. Amer. III., 111, *Arctia*.

phalerata Harris.

- 1837—Harris, Cat. Ins., Mass., 73, *Arctia*.
 1841—Harris, Rept. Ins., Mass., 245, *Arctia*.
 1862—Harris, Inj. Ins., Flint, ed. 347, f. 166, *Arctia*.
 1863—Saund., Syn. Can. Arct., 11, *Arctia*.
 1864—Pack., Proc. Ent. Soc., Phil., III., 177, *Arctia*.

1868—Grt., Trans. Amer. Ent. Soc., II., 117, pr. syn.

radians Wlk.

1856—Wlk., C. B. Mus. Lep. Het., III., 632, *Apantesis*.

1868—G. & R., Tr. Am. Ent. Soc., II., 72, pr. syn.

colorata Wlk.

1864—Wlk., C. B. Mus. Lep. Het., XXXI., 302, *Aloa*.

1868—G. & R., Trans. Amer. Ent. Soc., II., 85, pr. syn.

1876—Butl., Journ. Inn. Soc., XII., 432, =*radians*.

var. *incompleta* Butl.

1881—Butl., Ann. and Mag., N. H., Ser. 5, v. VIII., 311, *Arctia*.

Habitat—Can., U. S., generally.

The species has been recorded as a strawberry feeder. Mr. Butler's variety refers to one of those forms with the maculation partly obsolete, such as any decent series will show. The synonymy of Walker's species has been already referred to. The reference is rather to *decorata* Saund. than to *nais* Dru., but I have not much doubt of the identity of the two forms. There is, however, a species closely allied to *nais* in the National Museum collection, which is, I believe, as yet undescribed.

A. nerca Bdv.

1868—Bdv., Lep. Cal. (Ann. Soc. Ent. Belg., XII.), 77, *Chelonia*.

Habitat—California.

This species has disappeared from our lists. It is perhaps only a variety of *arge*, but I cannot find that it has been so referred.

A. nevadensis Grt. & Rob.

1866—Grt. & Rob., Proc. Ent. Soc., Phil., VI., 1, pl. 1, f. 1, ♂, *Arctia*.

1873—Stretch, Zyg. and Bomb., 74, *Arctia*.

1885—Neum., Ent. Amer., I., 93, —gives synonymy.

1886—Grt., CAN. ENT., XVIII., 109, *Arctia*.

behrii Stretch.

1873—Stretch, Zyg. and Bomb., 75, pl. 3, ff. 11 and 12, *Arctia*.

1873—Stretch, Zyg. and Bomb., 238, pr. syn.

var. *incorrupta* Hy. Edw.

1881—Edw., Papilio, I., 38, *Arctia*.

1883—Neum., Papilio, III., 71, 150, =*nevadensis*.

1885—Neum., Ent. Amer., I., 93, =*nevadensis*.

var. *sulphurica* Neum. Ent. Amer., I., 93, *Arctia*.

ochracea || Neum.

1883—Neum., Papilio, III., 71, *Arctia*.

1885—Neum., Ent. Amer., I., 93, *nomen bis lectum*.
var. *mormonica* Neum.

1885—Neum., Ent. Amer., I., 93, *Arctia*.

Habitat—Nevada, Arizona, Oregon, Calif.

As I have already indicated, I believe that *geneura* Strk. belongs to this series.

A. obliterata Stretch.

1885—Stretch, Ent. Amer., I., 105, *Arctia*.

Habitat—Unknown.

A. ochreate Butler.

1881—Butler, Ent. Mo. Mag., XVIII., 135, *Arctia*.

Habitat—United States.

Mr. Butler says his species is close to *phalerata*, and after carefully reading his description I believe he is right. At all events I cannot find anything in it that does not apply to *phalerata* as well.

A. oithona Strk.

1877—Strk., Lep. Rhop. et. Het., 131, *Arctia*.

Habitat—Texas.

This will turn out a remarkably close ally to *intermedia* Stretch, which is *not saundersii* Grote.

A. pallida Pack.

1864—Pack., Proc. Ent. Soc., Phil., III., 118, *Arctia*.

1873—Stretch, Zyg. and Bomb., 74, *Arctia*.

Habitat—New York.

The type is in the collection of the Am. Ent. Soc., where I have several times seen it. It is certainly not an *Arctia*, but perhaps nearer to *Seirarctia*.

A. phyllira Dru.

1770—Drury, Illustr., I., 15, pl. VII., f. 2, *Bombyx*.

1791—Oliv., Enc. Meth., V., 94, *Bombyx*.

1797—Abb. & Sm., * Ins., Ga., II., 127, pl. 64, *Phalena*.

1816—Hübner, Verzeichniss, 180, *Euplagia*.

1820—Hübner, Zutraege, *108, ff. 215, 216, *Euplagia*.

1837—Westw., ed. Drury, I., 15, *Callimorpha*.

- 1837—Harris, Cat., Ins., Mass., 73, *Arctia*.
1841—Harris, Rept. Ins. Mass., 245, *Arctia*.
1856—Wlk., C. B. Mus. Lep. Het., III., 610, *Arctia*.
1858—Wlk., C. B. Mus. Lep. Het., VII., 1780, *Arctia*.
1860—Clem., Proc. Ac. N. Sci. Phil., XII., 528, *Arctia*.
1862—Clem., App. to Morr. Synops., 339, *Arctia*.
1862—Harris, Inj. Ins., Flint ed., 347, *Arctia*.
1863—Saund., Syn. Can. Arct., 11, *Arctia*.
1876—Moeschl., Stett. Ent. Zeit., XXXVII., 296, *Arctia*.
1883—Hulst., Bull. Blkn. Ent. Soc., VI., 70, = *nais*.
1887—Smith, Ent. Amer., III., 111. an spec. dist.
var. *lugubris* Hulst.
1886—Hulst., Ent. Amer., II., 182, *Arctia*.

Habitat—Penn., N. Y., N. J., D. C., Can., Mass., Ills., Mo., Ga.

The distribution is wider—when the synonymy is once ascertained we can complete the record of occurrences.

(To be continued.)

DESCRIPTION OF THE LARVA OF TRIRHABDA TOMENTOSA, L.

BY WM. BEUTENMÜLLER.

Body elongated, subcylindrical, rounded above and flattened beneath; color above steel blue, with a series of transverse elevated ridges along the dorsum, two on each segment, and along the sides are three rows of tubercles, all steel blue. Body beneath, dirty brownish white; cervical shield also steel blue.

Thoracic feet jet black, shiny; abdominal and anal legs wanting.

Head small, subglobose, depressed in front; shiny jet black.

Mandibles simple, short, stout, slightly excavate internally beneath the apex.

Maxillæ robust, cylindrical; lobe rounded at the apex with a few bristles; palpi three jointed; first joint short, second joint somewhat larger, cylindrical, third joint conical, extending a little beyond the lobe.

Labium subtriangulate, palpi two-jointed, very short.

Antennæ very minute, hardly visible.

Length, about .10 mm; width, about .3 mm.

Food-plants, various species of golden rods and asters. June; single brooded.

NOTES ON THE INSECT FAUNA OF HIGH ALTITUDES IN
CUSTER COUNTY, COLORADO.

BY T. D. A. COCKERELL, WEST CLIFF, CUSTER CO., COL.

The faunæ of high altitudes always possess a peculiar interest by virtue of the light they throw on problems of geographical distribution, and especially the distribution in ancient times of what is now a strictly Arctic and Alpine fauna. For this reason, the following lists of species, fragmentary as they are, may be of some value as a contribution to our knowledge of the Alpine fauna of Colorado, and for comparison with Arctic and Alpine faunæ in general. The species here enumerated were taken in 1887, 1888 and 1889, on the eastern slope of the Sangre de Cristo Range, in Custer County, Colorado. Three gulches have been explored, namely, (1) Smith's Park Gulch, on a fork of Brush Creek, (2) Horseshoe Bend Gulch, the next gulch south of No. 1, and (3) Swift Creek Gulch. The great majority of insects came from Smith's Park Gulch. The altitudes are from 10,000 to 12,000 feet. A large number of insects were taken about the Micawber Mine, which is possibly not quite 10,000 feet; but it cannot be far from it, so the species are included. A list of the fauna and flora of the same part of Custer County, below 10,000 feet, is now in course of publication in the "West American Scientist." A comparison of the two lists will show that the fauna of higher altitudes differs very materially from that of the valley:—

COLEOPTERA.

These have been kindly identified by Dr. John Hamilton. They are classified according to locality and date of collection:—

- (1) Near Brush Creek, June 26 and 27, 1889—

Dolopius lateralis Esch.

Podabrus lateralis Lec.

Orsodacna atra var. *childreni* Kirby.

Cicindela longilabris Say.

Acmaeops proteus Kirby.

Adoxus vitis L.

Dichelonychia backii Kirby.

O. childreni and *D. backii* were common. *A. vitis* had the thorax black, and elytra reddish-fulvous.

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- (2) Near Micawber Mine, 1889—
Chrysobothris trinervia Kirby. A small example.
- (3) Horseshoe Bend Gulch, August 15—
Chrysomela continua Lec. Many specimens on flowers of
Gymnolomia multiflora.
- (4) Near Micawber Mine, Aug.—
Lachnosterna sp. ♀ (fragment).
Coccinella transversoguttata Fald.
Trichodes ornatus Say.
Buprestis nuttallii? (flying by day; not caught).
- (5) Micawber Mine, Aug. 7, 1889—
Acmaeops pratensis Laich.
Adoxus vitis L.
Zeugophora abnormis Lec.
Anthobium sp.
Mordella melæna Germ.
Leptura propinqua Bland.
" *subargentata* Kirby.
Anaspis rufa Say.
Homalota sp.
Mordella scutellaris Fab.
- (6) Smith's Park Gulch, Aug. 5—
Cardiophorus tenebrosus Lec.
- (7) Near Micawber Mine, Aug. 4—
Leptura propinqua.
Athous ferruginosus Esch.
- (8) Timber line above Smith's Park Gulch, Aug. 5—
Dasytes hudsonicus Lec.
- (9) Near Micawber Mine, Aug. 6—
Phyllotreta pusilla Horn. n. sp.
Hippodamia convergens Guér.
Glyptina atriventris Horn. n. sp.
Platystethus americanus Erichs.
Leptura propinqua Bland.
Adoxus vitis L.
Leptura subargentata Kirby.

HYMENOPTERA.

All the Hymenoptera have been submitted to Mr. W. H. Ashmead. The types of the new species are in his collection, and will be described by him.

(1) Near Brush Creek, June 27, 1889—

Bombus rufocinctus Cr.

Prosapis basalis Smith, ♂.

Oryssus occidentalis Cr.

Rhodites spinosellus Ckll., n. sp.

Limneria tibiator Cr.

Odynerus leucomelas Sauss.

Macrophya albipictus Ashm., ♂, ♀.

Camponotus sp.

Orthocentrus leucopsis Ashm.

Eurytoma diastrophii Welsh, ♀.

Of *R. spinosellus* only the round pickly leaf-galls were found.

(To be continued.)

CORRESPONDENCE.

CHRYSLIDS DEVoured BY CATERpillars.

Dear Sir: A few days ago I found a number of *Pyrameis cardui* larvæ, and also several (4) of the common, reddish brown, hairy caterpillars (*Spilosoma Isabella*), so often seen about gardens in the fall feeding on plants of the common garden hollyhock (*Althæa rosea*). Not having extra boxes to spare, I placed both species in a roomy pasteboard box, with a plentiful supply of hollyhock leaves. In the course of a day or two several of the *cardui* larvæ hung themselves to the corner of the box, and in a short time three were transformed to chrysalids. What was my surprise on looking into the box this morning to see if any more had hung or transformed, to find the reddish brown caterpillars had devoured two of the *cardui* chrysalids, and one of the caterpillars was actually engaged eating the third, and had consumed fully one-half of it. This was not done from lack of food, as there was an abundance in the box. Here, then, is a new source of destruction to our butterflies—a sort of cannibalism among caterpillars.

SHELLY W. DENTON, Wellesley, Mass.

EREBIA EPIPSODEA VAR. SINE-OCCELLATA Skinner.

Dear Sir: Is not this variety (CAN. ENT., p. 239) identical with var. *brucei* Elwes, (Trans. Ent. Soc. Lond., 1889, June, p. 326), described as smaller, without ocelli, the red band almost obsolete? *Brucei* was described from high altitudes in Colorado, so it is interesting to have it reappearing at lower levels in N. W. Ter. Mr. W. H. Edwards has kindly sent me the *Epipsodea* plate of his Butt. N. A., whereon are beautiful figures of *Brucei* and the early stages of the species.

Dec. 16, 1889. T. D. A. COCKERELL, West Cliff, Custer Co., Col.

GRAPTA INTERROGATIONIS.

Dear Sir: I beg to record the capture by myself of a beautiful specimen of *Grapta interrogationis* at Cote St. Antoine, Montreal, on the 11th of July. Its sluggishness and perfect condition showed that the insect had but just emerged from the chrysalis. *G. interrogationis* is extremely rare in the Province of Quebec. Tradition says that it had been, once upon a time, taken at Lachine—a few miles away; but for twenty-five years I have looked vainly for it.

South Quebec, Oct. 16, 1889.

THOMAS W. FYLES.

THE CORN SAW-FLY.

Dear Sir: The occurrence in America of *Cephus pygmaeus* Curtis, known in England as the Corn Saw-fly, may be worth a special record. In 1887, among insects taken by sweeping in a meadow, I found a *Cephus* not agreeing with any of the described American species. Mr. Ashmead has fully identified it as *C. pygmaeus*. In some Hymenoptera received from Mr. VanDuzee a few days ago, I find three specimens, all females, and taken at Buffalo—two on 9th June, 1888, and the other on 11th June, 1889. This shows that the occurrence of the species is not accidental, and that it is already widely distributed. Possibly next season we may hear of injuries inflicted by it upon wheat fields.

W. HAGUE HARRINGTON, Ottawa.

Mailed February 4th.

